1. Stratospheric Ozone Variability at Table Mountain, California (34.4°N, 117.7°W)

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4. Abstract

A wide range of temporal variability in stratospheric ozone profiles is investigated using more than 10 years of DIAL-ozone lidar measurements at the Jet Propulsion Laboratory (JPL), Table Mountain Facility (TMF), California. As part of the Network for the Detection of Stratospheric Change (NDSC) this system has been providing high-resolution vertical profiles of ozone number density since 1988 between approximately 18 and 50 km, and 2 to 3 nights a week on average. A 10-year climatology typical of early night ozone values will be presented. The observed seasonal and vertical structure of the ozone concentration is consistent with that typical of mid- to subtropical latitudes. A clear annual cycle in opposite phase below and above the ozone concentration peak is observed. The winter maximum observed below the ozone peak is associated with a maximum day-to-day variability, typical of a dynamically driven lower stratosphere. The maximum concentration observed in summer above the ozone peak reveals the more dominant role of the photochemistry. The seasonal and vertical structure of stratospheric ozone will be complemented with some case studies of observed ozone laminae in the lowermost stratosphere and their connection with the intrusion of polar vortex filaments into the mid- and subtropical latitudes. The effects of the tropopause height variability will also be investigated, as well as the ozone interannual variability including the possible signatures of the El Nino and the Southern Oscillation (ENSO), the Quasi-Biennial Oscillation (QBO), and the 11-year solar cycle.

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5. Topic: (1) Observations and analyses of total and vertical ozone distributions.

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